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### (54) Easily laterally opened type paper container

(57) The provision of an easily laterally opened type paper container (10) includes: a paper base material (11) which is made of material having thermoplastic resin in layers on both sides thereof; an opening piece (15) which is formed of a resin film, and sandwiched and bonded between an upper piece (13) and a lower piece (14) of an overlap width portion (12) of the paper base material which is overlapped and laminated on each other with a picking length; a notch portion defined in the

upper piece of said overlap width portion in correspondence with both ends of said opening piece laterally; and an oriented polyolefine film having such a characteristic that an orientation magnification of the film in one direction is larger than that in a direction orthogonal to the one direction, which is stacked on an inner surface of the paper container material in such a manner that the one direction having the larger orientation magnification coincides with an opening direction of the paper container.

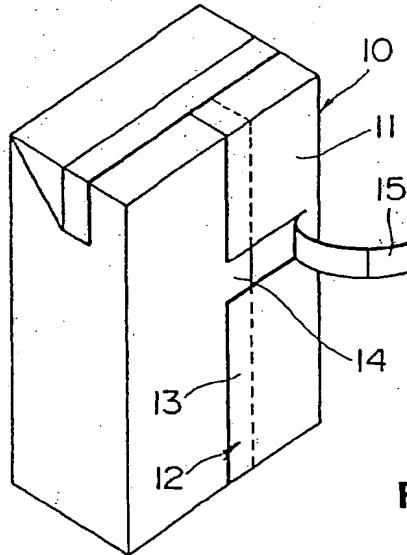


FIGURE 5

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**Description****BACKGROUND OF THE INVENTION****1. Field of the Invention**

The present invention relates to a laminated paper container (hereinafter referred to as paper container, simply) for containing liquid such as juice or gel-like food such as bean-curd or jelly, and more particularly to a paper container which is easily laterally opened.

**2. Description of the Related Art**

Paper containers have been popularly used for the purpose of containing liquid such as juice or sake, or gel-like food such as bean-curd or jelly because the paper container as used can be readily disposed of and the liquid or the gel-like food as contained in the paper container can be preserved at a room temperature for a long period of time. Up to now, as means for opening the above paper container, there have been known a type in which, as disclosed in Japanese Patent Unexamined Publication No. Sho 55-154240, a perforated line 3 is indicated on a corner of an upper lateral seal portion 2 of a paper container (Fig. 17), and the corner of the lateral seal portion 2 is pulled up and cut along the perforated line 3 when opening the paper container so that a spout 4 and an air passage 5 are made to be opened as shown in Fig. 18, and a type in which a spout 6 is formed on a top wall of the paper container 1, and a pull tab tape 7 is laminated on the spout 6 as shown in Fig. 19.

However, when taking out the gel-like food such as bean-curd or jelly from the paper container with such an opening structure, it is difficult to take out it without destroying the contents thereof. As a result, a pair of scissors, a cutter or the like must be used to open the paper container, thereby causing such a problem that it gives a considerably lot of trouble.

**SUMMARY OF THE INVENTION**

The present invention has been made to overcome the above problem with the conventional paper containers, and therefore an object of the present invention is to provide an easily laterally opened type paper container which can be opened without using a pair of scissors, a cutter or the like.

In order to solve the above problem, the present invention has been achieved by the provision of an easily laterally opened type paper container which comprises: a container material which is made of a paper material having thermoplastic resin layers on both outer surface and inner surface thereof; an opening piece having a suitable picking length which is formed of a resin film, and sandwiched and heat-sealed between an upper piece and a lower piece of an overlap portion of the con-

tainer material which is overlapped and heat-sealed between one side and the other side thereof; two notches defined in the upper piece of said overlap portion in correspondence with both ends of said opening piece laterally; and an oriented polyolefine film having such a characteristic that a stretching ratio of the film in one direction is larger than that in a direction orthogonal to the one direction, which is laminated to form one of inner layers of the paper container in such a manner that the one direction having the larger stretching ratio coincides with an opening direction of the paper container.

With the above structure, when the opening piece is picked and pulled laterally, two notches defined in the upper piece of the overlap portion induce the paper container to be tore laterally. In addition, the oriented polyolefine film laminated to form one of the inner layers of the paper container makes it easy to tear the paper container laterally together with the opening piece. As a result, the paper container is readily cut in a belt-like shape with the substantial width of the opening piece without any troubles, starting from these notches, and is separated into upper and lower portions. Then, with the removal of the upper portion thus separated, the paper container comes to be laterally opened in which the upper portion is wholly opened. Also, since the opening piece is formed of a resin film, the opening piece is readily deformed with the result that in filling and forming processes for the paper container, even when the container material passes through a roller or the like, any troubles can be prevented from occurring due to the opening piece being caught by the roller. Hence, the paper container of the present invention can be used with no problem even in aseptic packing that requires that a sequence of processes such as a process for filling the paper container with liquid or food, a process for forming the paper container thus filled, and so on are automatically conducted in an aseptic chamber or the like. It should be noted that, in this specification, the aseptic packing means that contents and a packing material which have been kept in an aseptic condition in advance are packed under an aseptic condition, and the paper container of the aseptic type means a paper container suitable to be used for the aseptic packing.

Also, it is preferable that a sealing tape is heat-sealed onto a rear side of the overlap portions of the container material which are overlapped and heat-sealed on each other in such a manner that the sealing tape heat-sealed onto both rear sides, namely the rear side of the upper piece and the rear side of the lower piece.

With this structure, the safety of sealing of the overlap portion can be enhanced.

Further, it is preferable that the opening piece is sandwiched and heat-sealed between the upper and lower pieces in such a manner that its one end is projected outwardly from an end portion of the lower piece.

With this structure, the sealing strength between the upper piece and the sealing tape is weakened so that

when the opening piece is picked and pulled, a cut-off portion of the upper piece is readily cut, thereby being capable of easily opening the paper container.

Furthermore, it is preferable that the opening piece is heat-sealed to the container material in such a manner that its front surface, which is heat-sealed to the inner surface of the upper piece, is larger in adhesive strength than its rear surface.

With this structure, when opening starts with pulling the opening piece, the rear surface of the opening piece readily peels off from the container material, and then the front surface does not peel off therefrom because it is strongly heat-sealed onto the container material, thereby being capable of easily and accurately conducting the laterally opening of the paper container by pulling the opening piece.

Still further, it is preferable that the opening piece is formed of a laminate consisting of two or more layers.

Still further, it is preferable that two parallel half-cut lines, each of which is extended from the notches of the upper piece of the overlap portion, respectively, around a container body laterally on an outer surface of the container material in such a manner that each depth reaches a paper material.

With this structure, when the opening piece is pulled laterally, those two half-cut lines on the paper container are cut, and a portion defined between those two half-cut lines is cut off in the belt-like shape without any troubles, thereby more surely being capable of conducting the opening of the paper container.

The above and other objects and features of the present invention will be more apparent from the following description taken in conjunction with the accompanying drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view showing an easily laterally opened type paper container in accordance with an embodiment of the present invention;

Fig. 2 is a side view showing a main portion of the easily laterally opened type paper container shown in Fig. 1;

Fig. 3 is a laterally cross-sectional view showing a main portion of the easily laterally opened type paper container shown in Fig. 1;

Fig. 4 is an explanatory diagram showing a main portion of the easily laterally opened type paper container shown in Fig. 1;

Fig. 5 is an explanatory diagram showing a state in which the easily laterally opened type paper container shown in Fig. 1 is being opened;

Fig. 6 is a side view showing a main portion of an easily laterally opened type paper container in accordance with another embodiment of the present invention;

Fig. 7 is a laterally cross-sectional view showing a main portion of the easily laterally opened type pa-

per container shown in Fig. 6;

Fig. 8 is an explanatory diagram showing a main portion of the easily laterally opened type paper container shown in Fig. 6;

Fig. 9 is a side view showing a main portion of an easily laterally opened type paper container in accordance with still another embodiment of the present invention;

Fig. 10 is a laterally cross-sectional view showing a main portion of the easily laterally opened type paper container shown in Fig. 9;

Fig. 11 is a laterally cross-sectional view showing a main portion of an easily laterally opened type paper container in accordance with yet still another embodiment of the present invention;

Fig. 12 is a laterally cross-sectional view showing a main portion of an easily laterally opened type paper container in accordance with yet still another embodiment of the present invention;

Fig. 13 is a perspective view showing an easily laterally opened type paper container in accordance with yet still another embodiment of the present invention;

Fig. 14 is a cross-sectional view showing a main portion of an example of a laminate structure of a container material used for the easily laterally opened type paper container in accordance with the present invention;

Fig. 15 is a perspective view showing an easily laterally opened type paper container in accordance with yet still another embodiment of the present invention;

Fig. 16 is a perspective view showing an easily laterally opened type paper container in accordance with yet still another embodiment of the present invention;

Fig. 17 is a perspective view showing a conventional paper container;

Fig. 18 is a perspective view showing a state in which the paper container shown in Fig. 17 is opened; and

Fig. 19 is a perspective view showing another conventional paper container.

#### 45 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Now, a description will be given in more detail of preferred embodiments of the present invention with reference to the accompanying drawings.

Figs. 1 to 4 show an easily laterally opened type paper container in accordance with one embodiment of the present invention. In this embodiment, a paper container 10 is so structured that both side ends of a container material 11 having a paper material on outer and inner surfaces of which low-density polyethylene films are laminated, respectively, are overlapped one on the other and then vertically sealed by thermally welding so

as to be cylindrically formed, and upper and lower portions of the cylindrical container material 11 are then laterally sealed by thermally welding, respectively.

In the above structure, on an overlap width portion 12 of the paper container 10, an opening piece 15 formed of a resin film is heat-sealed in a state where one end of the opening piece 15 is sandwiched between an upper piece 13 and a lower piece 14 which are made up of both side ends of the container material 11 which are overlapped with each other when vertically sealing them, and the other end of the opening piece 15 that serves as a picking portion 16 is projected laterally from the overlap portion 12.

In this embodiment, the one end of the opening piece 15 is not held between the upper and lower pieces 13 and 14 over the entire width of the overlap portion 12, but held therebetween so as to be positioned inside of the end portion of the lower piece 14 as shown in Figs. 3 and 4. As a result, there remains a sealing portion 17 where no opening piece 15 exists in the overlap portion 12. Further, a sealing tape 18 for enhancing the safety of sealing is heat-sealed on the rear surface of the overlap portion 12.

Also, two notches 19 are provided on the upper piece 13 of the overlap portion 12 in correspondence with both side ends of the opening piece 15. It is preferable that positions at which the notches 19 are defined coincide with both side ends of the opening piece perfectly. However, there arises no problem even though the former is slightly displaced with the latter.

An oriented polyolefine film 24 having such a characteristic that a stretching ratio of the film 24 in one direction is larger than that in a direction orthogonal to the one direction, is laminated to form one of the inner layers of the container material 11 of the paper container 10, in such a manner that the larger oriented direction of the film coincides with the opening direction of the container 10. The oriented polyolefine film 24 may be selected from an oriented polyethylene film, an oriented polypropylene film or the like. In this embodiment, the oriented polyethylene film is used as the oriented polyolefine film 24.

With the above structure, when the picking portion 16 of the opening piece 15 is picked and pulled laterally, the notches 19 defined in the upper piece 13 of the overlap portion 12 induce the paper container 10 to be tore laterally. In addition, the oriented polyolefine film 24 laminated to form one of the inner layers of the paper container 10 serves to tear the paper container 10 laterally together with the opening piece 15. As a result, the paper container 10 is readily cut off in a belt-like shape with the substantial width of the opening piece, starting from these notches 19, and is separated into upper and lower portions (Fig. 5). Then, with the removal of the upper portion thus separated, the paper container 10 comes to be laterally opened in which the upper portion is wholly opened. Also, since the opening piece 15 is formed of a resin film, the opening piece 15 is readily deformed

with the result that in filling and forming processes and so on for the paper container, even when the container material 11 passes through a roller or the like, any troubles can be prevented from occurring due to the opening piece 15 being caught by the roller.

Figs. 6 to 8, 9 and 10 show an easily laterally opened type paper container in accordance with another embodiment of the present invention, in which an opening piece 15 is sandwiched and heat-sealed between upper and lower pieces 13 and 14 of an overlap portion 12 of a paper container 10 in such a manner that one end of the opening piece 15 is projected outwardly from the end portion of the lower piece 14.

In the example shown in Figs. 6 to 8, opening of the paper container is facilitated while keeping the sealing property, and the one end of the opening piece 15 is projected outwardly from the end portion of the lower piece 14, and held and heat-sealed between the sealing tape 18 and the upper piece 13 so as to be positioned inside of the end portion of the sealing tape 18. A sealing portion 31 where no opening piece 15 exists remains between the sealing tape 18 and the upper piece 13. Although the suitable width A of the sealing portion 31 depends upon an overlapped width B of the sealing tape 18 and the upper piece 13, the shape of the base portion of the opening piece 15, and so on, it is preferable that the remaining width A of the sealing portion 31 is 20 to 70 % of the overlapped width B of the sealing tape 18 and the upper piece 13 (Fig. 8).

With the above structure, the sealing strength between the upper piece 13 and the sealing tape 18 is weakened by the opening piece 15 which is interposed between the upper piece 13 and the sealing tape 18 so that when the opening piece 15 is picked and pulled, a cut-off portion of the upper piece 13 can be readily cut, thereby being capable of easily opening the paper container 10.

Further, in the example shown in Figs. 9 and 10, the sealing property is slightly lower than that in the example shown in Figs. 6 to 8. However, the opening of the paper container is further facilitated. In this example, the one end of the opening piece 15 is sandwiched and heat-sealed between the upper piece 13 and the sealing tape 18 so that it is projected outwardly from the end portion of the sealing tape 18.

With this structure, the sealing strength between the upper piece 13 and the sealing tape 18 is further weakened by the opening piece 15 which is interposed between the upper piece 13 and the sealing tape 18 so that when the opening piece 15 is picked and pulled, a cut-off portion of the upper piece 13 can be readily cut by the weaker force.

Fig. 11 shows an easily laterally opened type paper container in accordance with still another embodiment of the present invention, in which the opening piece 15 is formed of multi layer laminants, a layer on the front surface of the opening piece 15 is heat-sealed onto the

container material 11 with the sealing strength larger than that between a layer on the rear surface thereof and the container material 11. This example is of a double-layer structure in which a polyethylene layer 22 is laminated on the front surface of the polyester layer 20 which is one kind of an air-barrier resin through an anchor coat 21 which is an adhesive.

The opening piece 15 of this structure is held between the upper piece 13 and the lower piece 14 which are made up of both side ends of the container material 11 which are overlapped one on the other when vertically sealing the paper container, and when the opening piece 15 is heat-sealed to the upper and lower pieces 13 and 14, the polyethylene layer 22 that constitutes the front surface of the opening piece 15 is firmly heat-sealed onto the low-density polyethylene film which is laminated on the rear surface of the upper piece 13. However, the polyester layer 20 that constitutes the rear surface of the opening piece 15 has a low affinity with the low-density polyethylene film which is laminated on the front surface of the lower piece 14, thereby not obtaining a strong adhesion.

With this structure, when opening starts with pulling the opening piece 15, the polyester layer 20 on the rear surface of the opening piece 15 readily peels off from the container material 11, and then the polyethylene layer 22 on the front surface does not peel off therefrom because it is strongly heat-sealed onto the container material 11, thereby being capable of easily and accurately conducting the laterally opening of the paper container 10 by pulling the opening piece 15.

Fig. 12 shows an easily laterally opened type paper container in accordance with still another embodiment of the present invention. This embodiment relates to the opening piece 15 having a three-layer structure in which a polyethylene layer 22, a polyester layer 20 and a polyethylene layer 22 are laminated on the front surface in the stated order. Anchor coat 21 is interposed between the polyethylene layer 22 and the polyester layer 20.

With this structure, since the front surface of the opening piece 15 is made of the same material as the rear surface, there occurs no curl. This makes it easy to handle the opening piece 15 during a paper container assembling process.

Fig. 13 shows an easily laterally opened type paper container in accordance with yet still another embodiment of the present invention, in which two parallel half-cut lines 23 are formed around a container body laterally on an outer surface of the container material 11 of the paper container 10 of the embodiments shown in Figs. 1, 6 and 9 in such a manner that each depth reaches a paper material around a container body laterally. The parallel two half-cut lines 23 are preferably provided on a lateral extension line from the two notches 19 defined in the upper piece 13 of the overlap portion 12. Those two half-cut lines 23 may be in the form of perforations or the like, although being not shown.

With the above structure, when the opening piece

15 is pulled laterally, those two half-cut lines 23 of the paper container 10 are cut, and a portion defined between those two half-cut portions 23 is cut off in the belt-like shape without any troubles, thereby more surely being capable of conducting the opening of the paper container 10.

Fig. 14 shows one example of the laminate structure of the container material 11 used for the paper container 10 of the present invention, in which a low-density polyethylene film 26 is laminated on the front surface of the paper material 25. Also, an aluminium foil 28 is laminated on the rear surface (liquid contact surface) of the paper material 25 through an adhesive 27. An oriented polyolefine film 24 having such a characteristic that the stretching ratio in one direction is larger than that in a direction orthogonal to the one direction is laminated on the aluminium foil 28 through an adhesive 29, and a lower-density polyethylene film 30 is laminated on the oriented polyolefine film 24. The oriented polyolefine film 24 is laminated such that the larger oriented direction of the film coincides with the opening direction of the paper container 10.

The easily laterally opened type paper container of the present invention is applicable to a brick type paper container (Fig. 1) in which after a roll-feed container material is vertically sealed in a flow direction so as to be cylindrical, it is formed and filled with the contents while the lateral sealing and the cutting are repeated appropriately; a flat top type paper container (Fig. 15) and a Gable type paper container (Fig. 16) or the like which are obtained in such a manner that container blanks into which the container material have been cut off in a pre-determined shape in advance are assembled, and after vertically sealing, the laterally sealing of the bottom portion, filling of the paper container with the contents and the laterally sealing of the top portion are conducted;

According to the easily laterally opened type paper container of the present invention, the opening piece which is sandwiched and heat-sealed between the overlap portion of the paper container readily cut off the paper container laterally starting from the notches. Consequently, the paper container is separated into upper and lower portion, thereby being capable of readily opening the paper container.

The foregoing description of a preferred embodiment of the invention has been presented for purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise form disclosed, and modifications and variations are possible in light of the above teachings or may be acquired from practice of the invention. The embodiment was chosen and described in order to explain the principles of the invention and its practical application to enable one skilled in the art to utilize the invention in various embodiments and with various modifications as are suited to the particular use contemplated. It is intended that the scope of the invention be defined by the claims appended hereto, and their equivalents.

## Claims

1. An easily laterally opened type paper container, comprising:

a container material which is made of material having thermoplastic resin layers on both outer surface and inner surface thereof;  
 an opening piece having a suitable picking length which is formed of a resin film, and sandwiched and heat-sealed between an upper piece and a lower piece of an overlap portion of the container material which is overlapped and heat-sealed on between one side and the other side thereof;  
 two notches defined in the upper piece of said overlap portion in correspondence with both ends of said opening piece laterally; and  
 an oriented polyolefine film having such a characteristic that a stretching ratio of the film in one direction is larger than that in a direction orthogonal to the one direction, which is laminated to form one of inner layers of the paper container in such a manner that the one direction having the larger stretching ratio coincides with an opening direction of the paper container.

2. An easily laterally opened type paper container as claimed in claim 1, further comprising a sealing tape which is heat-sealed onto a rear side of the overlap portion of the container materials which are overlapped and heat-sealed on each other in such a manner that the sealing tape heat-seals the rear sides of both the upper piece and the lower piece.

3. An easily laterally opened type paper container as claimed in claim 2, in which the opening piece is sandwiched and heat-sealed between the upper and lower pieces in such a manner that its one end is projected outwardly from an end portion of the lower piece.

4. An easily laterally opened type paper container as claimed in claim 1, 2 or 3, wherein the opening piece is heat-sealed to the container material in such a manner that its front surface is larger in adhesive strength than its rear surface.

5. An easily laterally opened type paper container as claimed in claim 1, 2, 3 or 4, wherein the opening piece is of a laminate consisting of two or more layers.

6. An easily laterally opened type paper container as claimed in claim 1, 2, 3, 4 or 5, further comprising two parallel half-cut lines, each of which is extended from the notch of the upper piece of the overlap portion, respectively, around a container body laterally

on an outer surface of the container material in such a manner that each depth reaches a paper material.

7. An easily laterally opened type paper container as claimed in claim 1, 2, 3, 4, 5 or 6, wherein said container is of the aseptic type paper container.

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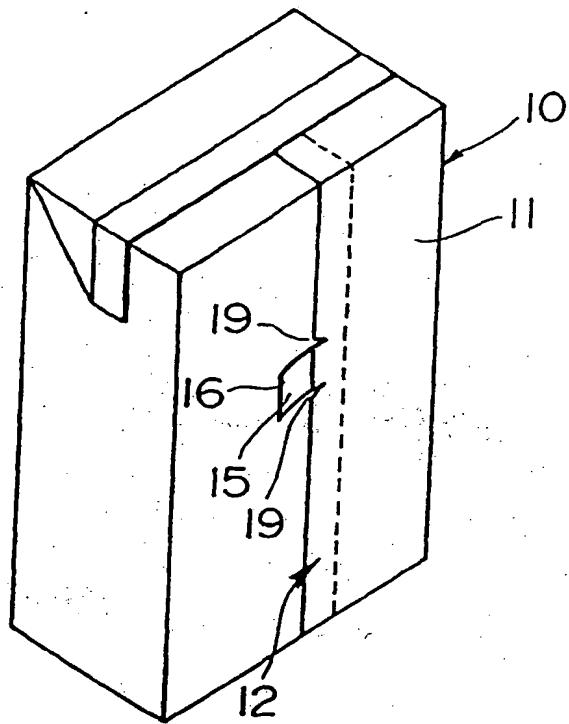
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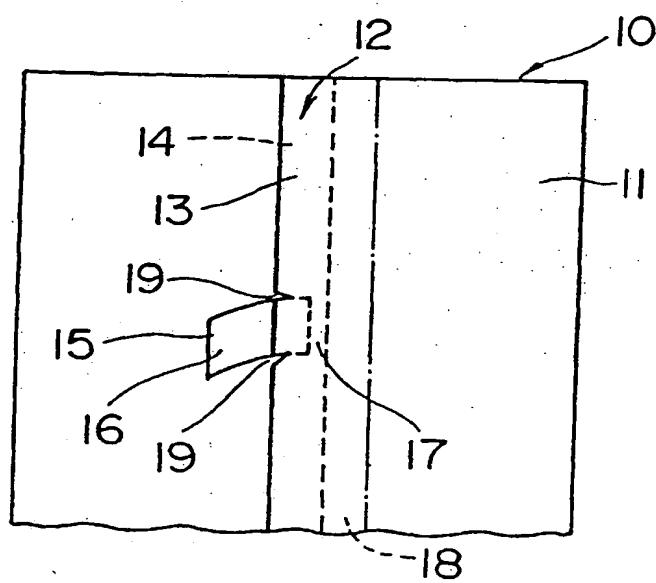
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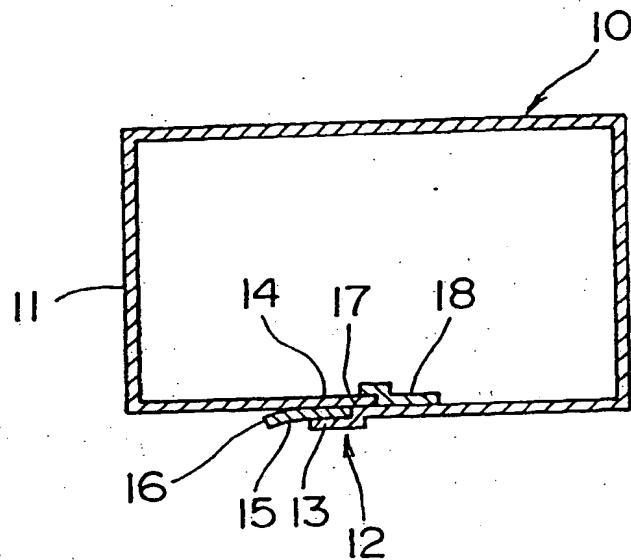
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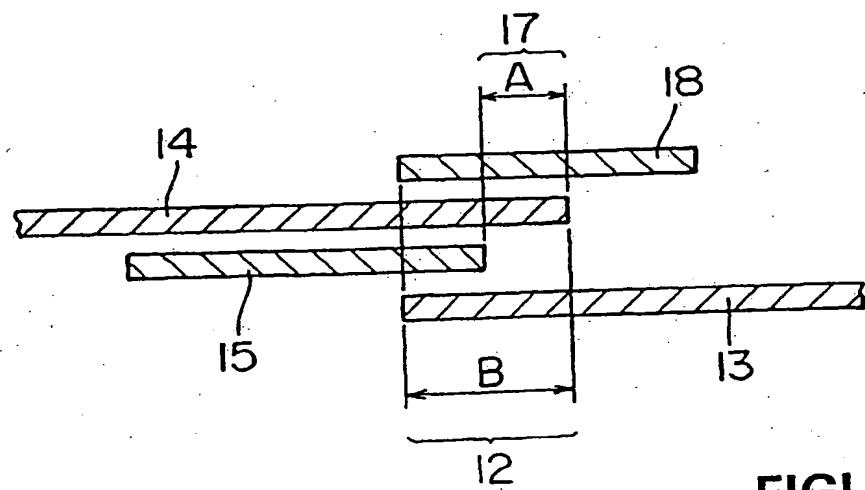
**FIGURE 1**



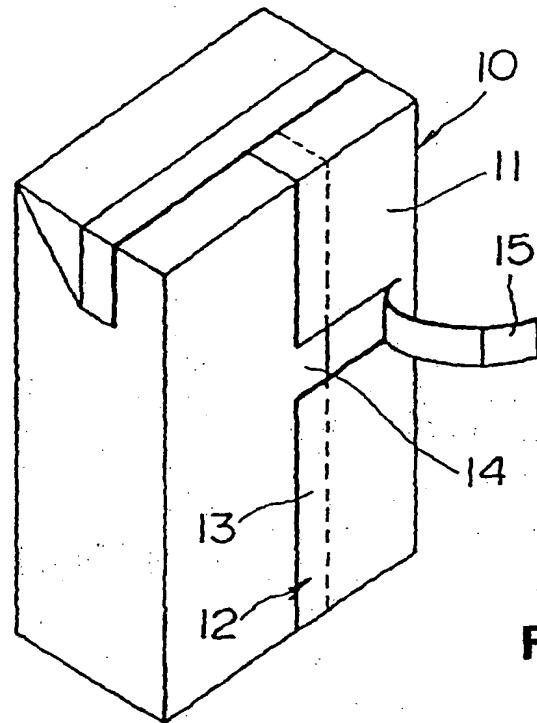
**FIGURE 2**



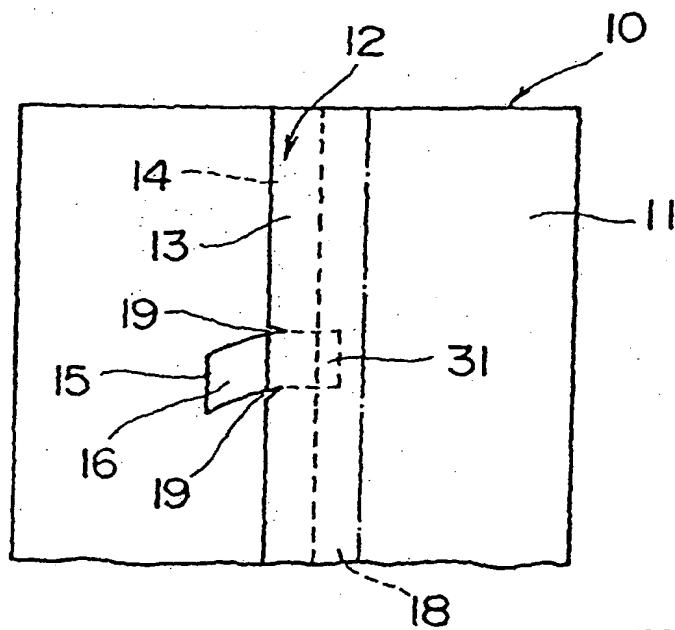
**FIGURE 3**



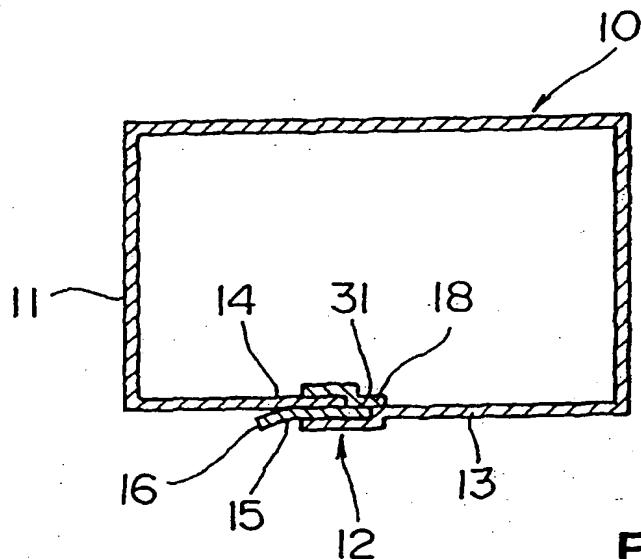
**FIGURE 4**



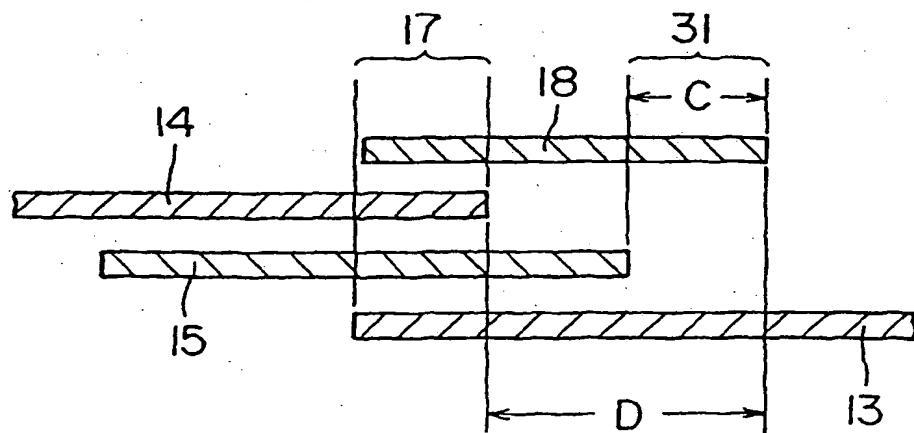
**FIGURE 5**



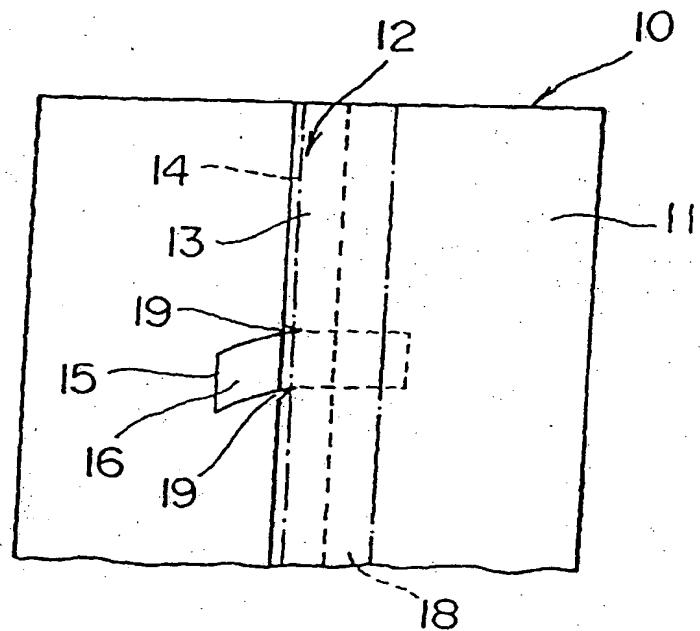
**FIGURE 6**



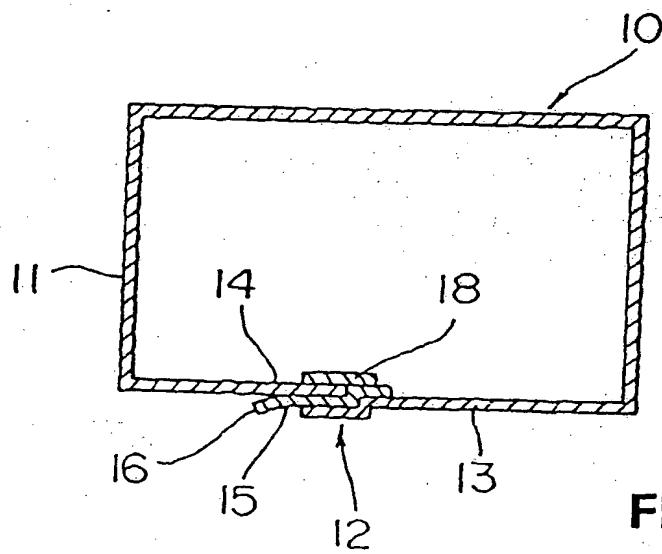
**FIGURE 7**



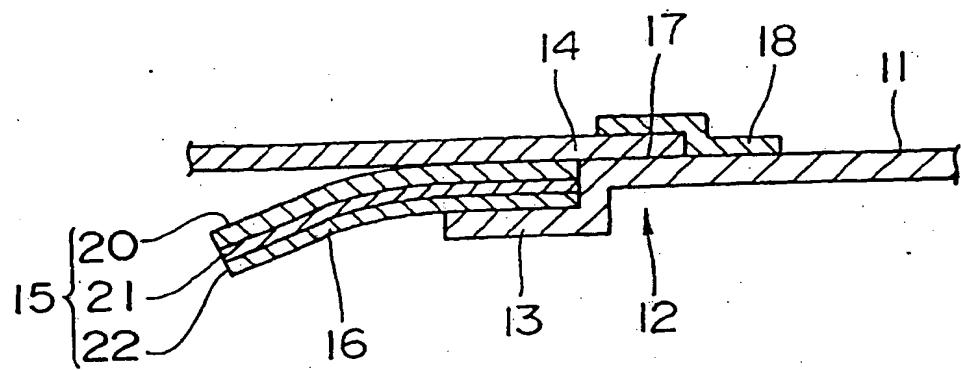
**FIGURE 8**



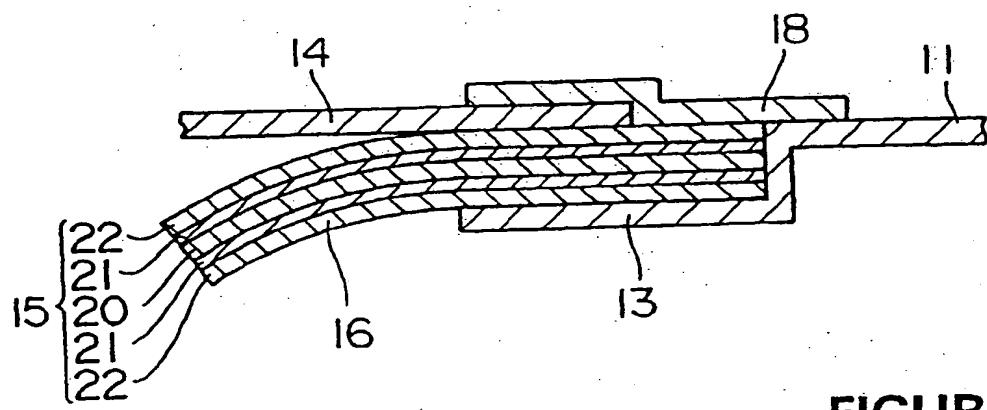
**FIGURE 9**



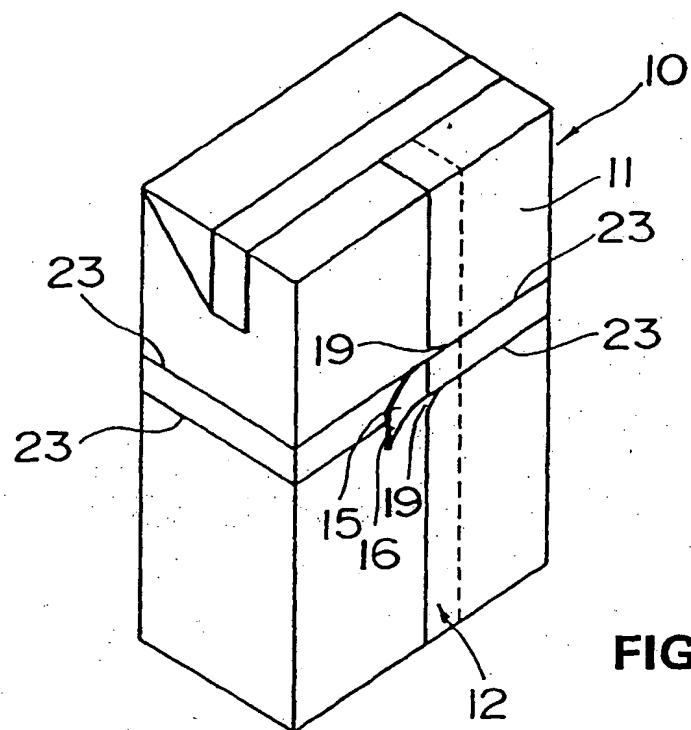
**FIGURE 10**



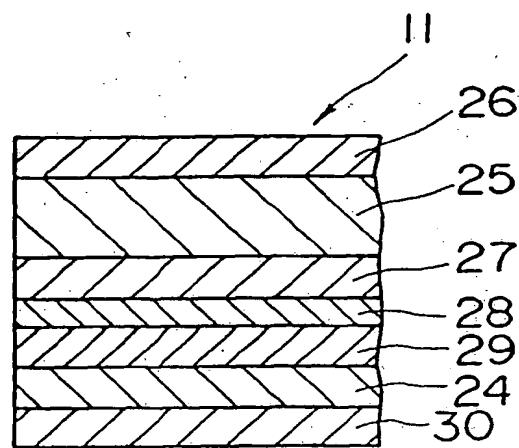
**FIGURE 11**



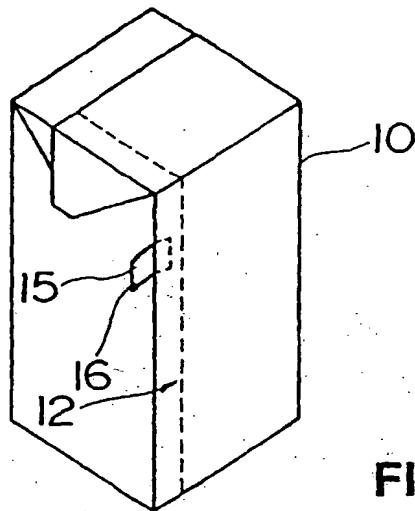
**FIGURE 12**



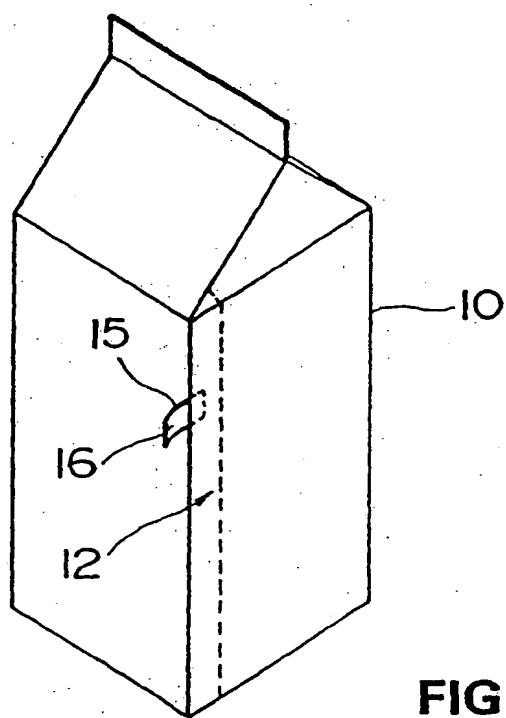
**FIGURE 13**



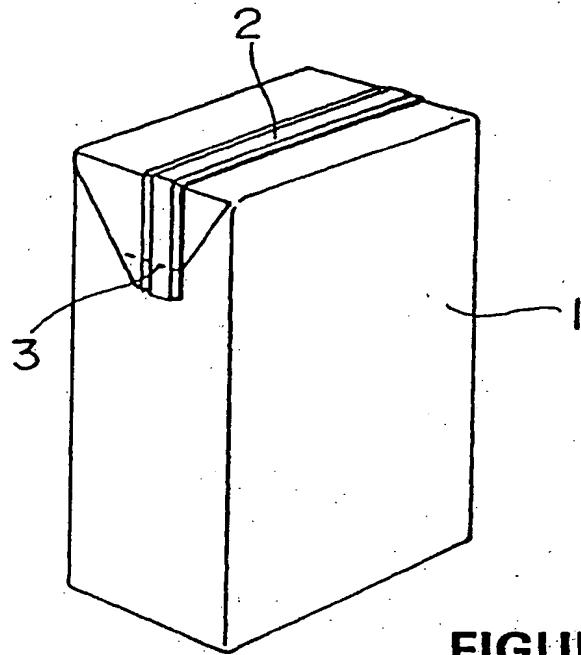
**FIGURE 14**



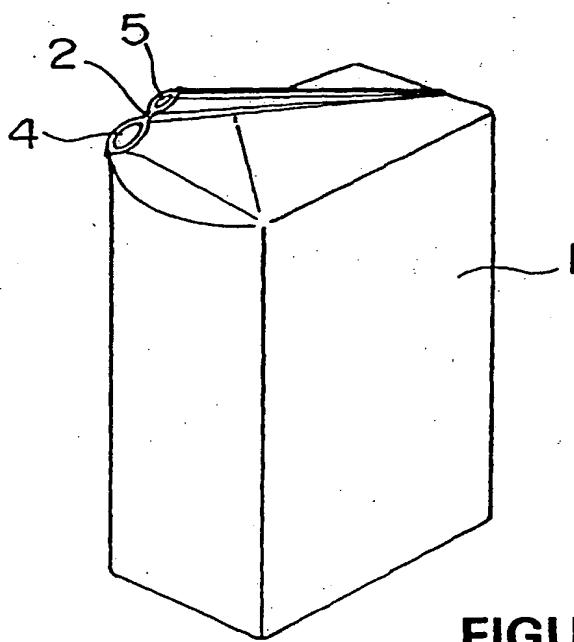
**FIGURE 15**



**FIGURE 16**

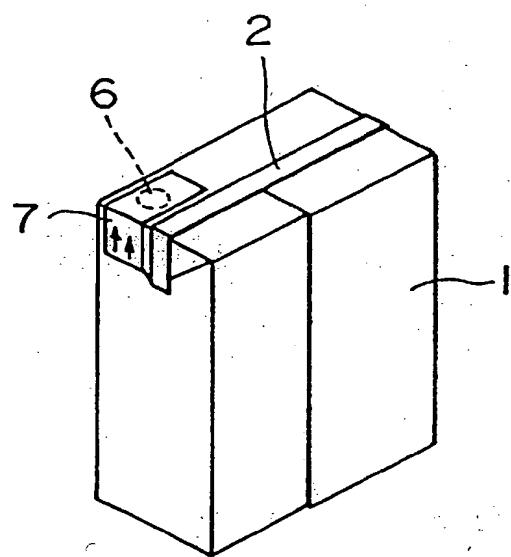


**FIGURE 17**



**FIGURE 18**

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**FIGURE 19**



European Patent  
Office

## EUROPEAN SEARCH REPORT

Application Number  
EP 96 30 8544

DOCUMENTS CONSIDERED TO BE RELEVANT				
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim		
A	DE 27 34 250 A (ALTSTÄDTER VERPACKUNGS VERTRIEBS) * page 13, paragraph 1 - page 14, paragraph 3; figures 4-7 *	1-3,5,7		
A	US 3 402 875 A (PALMER) * column 4, line 25 - line 33; figures 1,2,4 *	1,3,7		
A	US 3 773 248 A (CECIL ET AL) * abstract; figure 1 *	1,6,7		
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">TECHNICAL FIELDS SEARCHED (Int.Cl.6)</td> </tr> <tr> <td style="padding: 2px;">B65D</td> </tr> </table>			TECHNICAL FIELDS SEARCHED (Int.Cl.6)	B65D
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B65D				
<p>The present search report has been drawn up for all claims</p>				
Place of search	Date of completion of the search	Examiner		
THE HAGUE	21 March 1997	Leong, C		
<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background D : document cited in the application O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons &amp; : member of the same patent family, corresponding document</p>				

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